IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Inventors: Andrew Ferlitsch

Serial No.: 10/731,400

Filed: December 9, 2003

Title: PRINT SUBSYSTEM DESPOOLING BACKPLANE

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) ATTORNEY FILE NO.
)   SLA1350
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) Art Unit: 2625
) Examiner: McLean, Neil R.
) Confirmation No.: 4524
) Customer: 55,286
)

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

This is an appeal from the rejection by Examiner Neil McLean, Group Art Unit 2625, of claims 1-2, 4, 6-9, 11-17, 19, 21-24, and 26-30, as set forth in the CLAIMS APPENDIX.

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REAL PARTY IN INTEREST

The real party in interest is Sharp Laboratories of America, Inc., as assignee of the present application in the United States Patent Office, with a recordation date of December 9, 2003 at Reel 014785, Frame 0278.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF THE CLAIMS

Claims 3, 5, 10, 18, 20, and 25 are canceled.

Claims 1-2, 4, 6-9, 11-17, 19, 21-24, and 26-30 are in the application.

Claims 1-2, 4, 6-9, 11-17, 19, 21-24, and 26-30 are rejected.

Claims 1-2, 4, 6-9, 11-17, 19, 21-24, and 26-30 are appealed.

STATUS OF AMENDMENTS

Amendments to the claims were presented in a paper received at the PTO on August 22, 2008. These claim amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

As noted in the Applicant's specification, custom printing processes (e.g., rerouting a job if the intended printer is broken) can be accomplished using hardcoding, but then, only preprogrammed actions can be accomplished (page 1, ln. 10 through page 4, ln. 13). Alternately, a print assist process and user interface (UI) can be interposed between the client and the printer to add print filters. However, these filters support a field of narrow job-specific operations, are limited by language syntax, and are order dependent (page 4, ln. 14, through page 5, ln. 8). The claimed invention describes a means of managing print jobs with greater flexibility by using a printer despooling backplane to convert the job into an internal representation (IR) document that is independent of the language format of the target printer.

Claim 1 describes a method for managing print jobs using a print subsystem despooling backplane (specification – page 25, ln. 18 through page 28, ln. 14, Fig. 7). In Step 702 the print subsystem despooling backplane accepts a print job in a first printer language format associated with a first printer device type (page 28, ln. 3-5). In Step 704 a plurality of despooling backplane plugins are called (page 27, ln. 18-19). As defined in the specification (page 14, ln. 9-14), custom actions are implemented as plugins, which are predefined components within the backplane, where each component handles a different operational concept, such as job analysis/modification, job accounting, job control, job monitoring/recovery, job despooling, device monitoring, or security.

Step 706 converts the print job into an internal representation (IR) document that is independent of the printer device target and the language format associated with the printer device target

(page 25, ln. 20-23). In the context of printing, IR is a language format that is independent of any particular printer language, e.g., PDL or PJL (page 14, ln. 21-25). Step 706 also stores the IR document as shared data (page 28, ln. 12). Step 708 accesses the IR document from the shared data memory (page 28, ln. 13-14), and generates a multiple processed IR document (page 27, ln. 19-20 and page 13, ln. 4-5). Step 708 uses the plurality of plugins to serially process, parallel process, or process the IR document using a combination of serial and parallel processes (page 27, ln. 20-23).

Step 710 converts the processed IR document into a processed print job in a second printer language format associated with a second printer device type (page 28, ln. 7-10). Step 712 supplies the processed print job to a despooling backplane output interface (page 25, ln. 25-26).

Claim 16 recites a print subsystem despooling backplane (specification – page 8, ln 9 through page 14, ln. 3, Fig. 2). The backplane 201 is comprised of a library 202 of despooling backplane plugins and a controller 204 (page 8, ln. 10-12). The controller 204 has an interface on line 206 to accept a print job in a first printer language format associated with a first printer device type (page 12, ln. 17-18). The controller 204 converts the print job into an IR document that is independent of the printer device target and the language format associated with the printer device target, and supplies the IR document at an interface on line 208 (page 8, ln. 20-24). A shared data memory 240 has an interface on line 208 to accept the IR document (page 13, ln. 14).

A component processor 210 has an interface on line 212 to call a plurality of plugins from the library 202, and an interface on line 208 to accept the IR document from the memory 240 (page 8. ln. 25-27). The component processor 210 generates a multiple processed IR document by using the plugins to parallel process, serial process, or process the IR document using a combination of serial and parallel processes (page 12, ln. 25 through page 26, ln. 3). The component processor also converts the processed IR document into a second printer language format associated with a second printer device (page 12, ln. 22-24), which is supplied on line 214 (page 9, ln. 1-3).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1.   Whether claims 1-2, 4, 6-9, 11-17, 19, 21-24, and 26-30 are unpatentable under 35 U.S.C. 103(a) with respect to Kawamoto (US 7,199,890), in view of Kuo et al. ("Kuo"; US 6,400,471) and Yamamoto et al. ("Yamamoto"; US 7,199,890).

ARGUMENT

1.   The rejection of claims 1-2, 4, 6-9, 11-17, 19, 21-24, and 26-30 are unpatentable under 35 U.S.C. 103(a) with respect to Kawamoto (US 7,199,890), in view of Kuo et al. ("Kuo"; US 6,400,471) and Yamamoto et al. ("Yamamoto"; US 7,199,890..

CLAIMS 1 and 16

In Section 7 of the Final Office Action claims 1-2, 4, 6-9, 11-17, 19, 21-24, and 26-30 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to Kawamoto (US 7,199,890), in view of Kuo et al. ("Kuo"; US 6,400,471) and Yamamoto et al. ("Yamamoto"; US 7,199,890. The Office Action acknowledges that Kawamoto fails to disclose a plurality of backplane plugins, or the generation of a processed IR document using the plurality of plugins. The Office Action states that Kuo discloses these features, and that it would have been obvious to combine references because both references coordinate the functioning and communication of various image processing stages and handle data flow between stages. The motivation to combine references would be to integrate different platforms in an effort to reduce costs. The Office Action also acknowledges that Kawamoto and Kuo fail to disclose parallel processing, or a combination of parallel and serial processing, but that Yamamoto discloses these features, and that it would have been obvious to use parallel and serial processing of a document in a despooling system. The motivation to combine references would have been to provide more

than one method of processing data, depending upon the speed and economy of processing. This rejection is traversed as follows.

Kawamoto describes a system for the automatic selection (switching) of a printer/printer driver from a pool of printers. Application data is first passed through a first (common) printer driver 301, which produces a common output that is independent of the target printer. The output (e.g., intermediate format) is then directed towards the system spooler. Depending on the current print condition (e.g., availability, speed, error, etc.), a printer is picked from the printer pool. Once a printer is selected, a printer driver specific to the selected printer is determined (e.g., driver 203, 601, or 602). A despooler 305 then plays the graphics commands from the common output back to the selected printer driver. The selected printer driver 203 then converts the output to a format specific to the selected printer, spools the output to a second spooler 204, and sends printer specific data to the printer 1500.

Kawamoto does not disclose a plurality plugins, the storing of an IR document in a shared data memory, or the accessing of an IR document from shared memory, so that it can be processed by the plurality of plugins.

Kuo discloses a system for processing a digital image from a digital camera. Raw image data in a CCD format is captured by a digital camera 100 (Fig. 6). An image processing backplane 630 includes 3 plug-in image processing software modules 622, 624, and 626. A line reader 620 and line writer 650 manage the flow of CCD data. The backplane 630

serially feeds the data from one plug-in to the next. After processing, the data is converted to a JPEG image by JPEG module 628 (col. 9, ln. 9-38).

The *Response to Arguments* Section of the Office Action (page 4) notes that a print job may be raster data, or some representation other that PDL, such as images, citing page 10, lines 15-22 of the Applicant's specification. In traverse, the Applicant notes that even if some print jobs can be referred to as images, the corollary statement is not necessarily true. Not all images are formatted in a language. More explicitly, not every image is formatted in a print job language. In this case, CCD data is not an image type of print job.

CCD data is raw data from a camera. The raw data cross-references position with intensity and color. CCD data varies according the camera and manufacturer, and it is not organized as a language. In particular, CCD data is not a print job language. The Applicant is unaware of any conventional printer capable of printing a job where the information is presented as raw CCD data. In contrast, JPEG, the language into which Kuo's CCD data is converted after processing, is one example of a printer language.

Raw CCD image data is not a printer language associated with a particular printer. Neither is CCD data a document (i.e. an IR document). Kuo does not disclose an IR document, as defined by the claimed invention. Therefore, Kuo cannot disclose the processing of an IR document.

The Yamamoto reference has been cited by the Examiner as an example of parallel *processing*. The *Response to Argument* Section (page 3) states that Yamamoto discloses parallel and serial interfaces,

citing Fig. 3. In Fig. 3 Yamamoto discloses a program for driving either a parallel or serial interface, connected to a printer (col. 6, ln. 5-11). As is well known in the art, parallel port and serial port interfaces refer to the protocol used to communicate between computer devices, i.e., between a personal computer and a printer. A parallel port interface is defined by the IEEE 1284 standard, and is now obsolete. A serial interface is associated with the RS-232 standard, and interfaces such as Ethernet, FireWire, and USB.

The Applicant respectfully submits that parallel and serial port interfaces have nothing to do with document processing, only document transmission. Yamamoto does not disclose converting a print job into an IR document that is independent of the target device and target device language. Yamamoto does not disclose the processing of an IR document. Yamamoto does not disclose any processes performed in a printer despooler subsystem.

An invention is unpatentable if the differences between it and the prior art would have been obvious at the time of the invention. As stated in MPEP § 2143, the *KSR International Co. v Teleflex Inc.* decision (82 USPQ2d 1385, 1395-1397, 2007) suggests 7 exemplary rationales to support a conclusion of obviousness, which include:

A) Combining prior art elements according to known methods to yield predictable results;

B) Simple substitution of one known element for another to obtain predictable results;

C) Use of known technique to improve similar devices (methods, or products) in the same way;

D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

G) Some teaching, suggestion, or motivation in prior art would have lead one of ordinary skill to modify the prior art reference or the combine prior art references teachings to arrive at the claimed invention.

The Office Action states that modifications to Kawamoto would have been obvious to one of ordinary skill in the art in light of Kuo and Yamamoto. This rejection appears to be most closely grounded in the G) rationale - Some teaching, suggestion, or motivation in prior art would have lead one of ordinary skill to modify the prior art reference or the combine prior art references teachings to arrive at the claimed invention.

With respect to this rationale, MPEP 2143 (G) states that the rejection must articulate the following criteria to resolve the *Graham* factual analysis:

(1) a finding that there was some teaching, suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings;

(2) a finding that there was a reasonable expectation of success; and

(3) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

With respect to the above-referenced first factual analysis criteria, the three references have been combined based upon the assumption that the combination discloses every limitation recited in Applicant's claims 1 and 16. However, as acknowledged in the Office Action, Kawamoto fails to disclose the generation of a multiple processed IR document using a plurality of plugins. Neither does Kawamoto disclose the storing an IR document in a shared data memory. As recited in the claimed invention, a shared data memory permits an IR document to be accessed by multiple plugins.

As discussed above, neither Kuo nor Yamamoto disclose the conversion of a print job into an IR document, the saving of an IR document in a shared memory, or any processes performed in a printer despooler. Since Kuo and Yamamoto do not disclose an IR document, they cannot disclose an IR document being processed by a plurality of plugins. Therefore, even if elements from Kuo and Yamamoto are combined with Kawamoto, that combination does not explicitly disclose every limitation of claims 1 and 16.

The Office Action states that it would have been obvious to apply the features of Kuo and Yamamoto to Kawamoto, to coordinate the functioning and communication of various image processing stages and to provide more than one method of processing data. The motivation to combine references would be to integrate different platforms in an effort

to reduce costs, and to provide more than one method of processing data. However, the motivation to integrate different platforms and to provide alternate data processing paths does not actually suggest a particular means of modifying Kawamoto in such as way as to make the Applicant's claim limitations obvious. Alternately stated, the Applicant's claims do not recite the integration of different platforms or alternate data processing paths. The claimed invention recites different subject matter.

In responding to the Applicant's assertion that there is no suggestion to combine references, the *Response to Arguments* Section of the Office Action states that the prior art cited is all from Class 358, which deals with communication or reproduction of images. In traverse, it should be noted that not every patent in Class 358 suggests modifications to other patents in the same class. Neither is it necessarily relevant that Kuo suggests modifications to Kawamoto. Rather, the rejection must present an analysis of how Kuo suggests modifications to Kawamoto that make the claimed invention limitations obvious.

Kawamoto's method does not perform multiple processes upon intermediate code within a single print driver. Instead, Kawamoto's method requires the common data to be written to disk (1st spooler pass) and then read back (2nd spooler pass) for the second printer driver. In contrast, the claimed invention keeps the IR document in a shared data memory, so that multiple processes (plugins) can all access the same IR document in memory. As a result, the recited IR document can be parallel processed.

Kuo does not disclose the conversion of a job in a printer language format into an IR document. Kuo does not describe processing an IR document.

Therefore, Kuo cannot be said to suggest modifications to Kawamoto that would convert a print job into an IR document for processing. Neither does Kuo suggest modifications to Kawamoto for performing any functions in a printer despooling subsystem. Since Yamamoto's parallel and serial port interfaces have nothing to do with document processing, Yamamoto does not suggest any modifications to Kawamoto that would convert a print job into an IR document for processing. Neither does Yamamoto suggest printer despooler processing.

A *prima facie* analysis of motivation is especially critical in the present circumstances since the rejection is predicated on limitations that are not explicitly disclosed in the prior art references. The claimed invention can only be obvious if an artisan makes substantial modifications to the Kawamoto reference. However, there is nothing in the Kuo or Yamamoto references that suggest printer despooler processes, or the conversion of a print job into an IR document for processing.

Neither does the obviousness rejection provide evidence that such a modification would have been obvious to one with skill in the art based upon what was well known at the time of the invention. "(A)nalysis [of whether the subject matter of a claim would have been obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007). However, if the *prima facie* rejection is supported by what was known by a person of ordinary skill in the art then additional evidence should have been provided. Notable, when the source or

motivation is not from the prior art references, "the evidence" of motive will likely consist of an explanation or a well-known principle or problem-solving strategy to be applied". *DyStar,* 464 F.3d at 1366, 80 USPQ2d at 1649. The Office Action does not supply evidence that it was well known at the time of the invention to convert a print job into an IR document for processing in a printer despooler subsystem.

With respect to the second analysis criteria needed to support the G) obviousness rationale, even if an expert were given the Kawamoto, Kuo, and Yamamoto references as a foundation, no evidence has been provided to show that there is a reasonable expectation of success in the claimed invention. That is, there can be no reasonable expectation of success if the references, and what was known by artisan at the time of the invention, do not teach all the limitations of the claimed invention.

In summary, the Applicant respectfully submits that a *prima facie* case of obvious has not been supported since the combination of Kawamoto, Kuo, and Yamamoto does not explicitly disclose every limitation of claims 1 and 16. Neither has a case been supported that Kawamoto can be modified to supply the missing limitations in view of Kuo and Yamamoto, or what was well known by a person of skill at the time of the invention.

Claims 2, 4, 6-9, 11-15, 17, 19, 21-24, and 26-30

Claims 2, 4, 6-9, and 11-15, are dependent from claim 1, and claims 17, 19, 21-24, and 26-30 are dependent from claim 16. Since claims 1 and 16 can be distinguished from the cited prior art references, a *prima facie* case has not been presented to support the rejection of these dependent claims.

SUMMARY AND CONCLUSION

It is submitted that for the reasons pointed out above, the claims in the present application clearly and patentably distinguish over the cited references. Accordingly, the Examiner should be reversed and ordered to pass the case to issue.

Respectfully submitted,

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CLAIMS APPENDIX

IN THE CLAIMS:

1.   (previously presented)   A method for managing print jobs using a print subsystem despooling backplane, the method comprising:

accepting a print job in a first printer language format associated with a first printer device type, at a print subsystem despooling backplane input interface;

calling a plurality of despooling backplane plugins;

converting the print job into an internal representation (IR) document that is independent of a printer device target and the language format associated with a printer device target;

storing the IR document in a shared data memory;

each plugin accessing the IR document in shared data memory;

generating a multiple processed IR document by using the plurality of plugins to perform an action selected from a group consisting of parallel processing the IR document, serially processing the IR document, and processing the IR document using a combination of parallel and serial processes;

converting the processed IR document into a processed print job in a second printer language format associated with a second printer device type; and,

supplying the processed print job at a despooling backplane output interface.

2.   (previously presented)   The method of claim 1 wherein calling the plurality of despooling backplane plugins includes calling plugins chosen from the group including:

user-selected plugins;

predetermined plugins responsive to criterion such as printer driver, printer model, printer configuration, printer condition, user, administrative grouping, document content, and document type; and,

plugins called from other plugins.

3.   canceled

4.   (previously presented).   The method of claim 1 wherein processing the IR document in response to the plurality of plugins includes performing a process selected from the group including translating the print job into an IR document, analyzing, modifying the print job data, modifying control of the print job, gathering print subsystem-external information related to the print job, producing print subsystem-external information related to the print job, setting print subsystem-external information related to the print job, and reassembling IR documents.

5.   canceled

6.   (previously presented)   The method of claim 4 wherein reassembling IR documents includes removing conflicts between a plurality of processed IR documents; and,

wherein converting the processed IR document into a processed print job includes converting the plurality of IR documents into the processed print job.

7.   (previously presented)   The method of claim 4 wherein setting print subsystem-external information related to the print job includes selecting the second printer language format associated with the second printer device type.

8.   (original)   The method of claim 4 wherein gathering print subsystem-external information related to the print job includes monitoring a printer condition selected from the group including the availability of connected printing devices, currently printing print jobs, pending print jobs, completed print jobs, print job failures, printer performance, printer locality, and printer capabilities.

9.   (original)   The method of claim 8 wherein monitoring a printer condition includes:
    querying a node selected from the group including a print subsystem spooler, a print subsystem port manager, a printer manager, a print service, and a printer; and,
    maintaining a cache of printer condition information.

10.   canceled

11.   (original)   The method of claim 4 wherein translating the IR document includes parsing spool/raster image processor

(RIP) footers and headers, parsing a print job control header, and parsing language data selected from the group including raster, image, and page description language (PDL) data.

12. (original) The method of claim 11 wherein parsing a print job control header includes:

calling a plurality of printer job control header plugins selected from the group including printer job language (PJL) and job definition format (JDF) plugins; and,

using the print job control header plugin that recognizes the print job control header data.

13. (original) The method of claim 11 wherein parsing language data includes:

calling a plurality of language plugins selected from the group including raster, image, printer control language (PCL), portable document format (PDF), PostScript (PS), PCL XL, HP GL/2, IPDS, Escape P, SCS, and TIFF plugins; and,

using the language plugin that recognizes the language data.

14. (original) The method of claim 4 wherein analyzing the IR document includes performing an action selected from the group including job accounting, printer pooling, job splitting, access control, security, content filtering, resource downloading, compression, reformatting, and language translation.

15. (original)   The method of claim 4 wherein gathering print subsystem-external information related to the print job includes gathering information selected from the group including a print subsystem host, a printer, a printer device manager, and a print service.

16. (previously presented)   A print subsystem despooling backplane, the backplane comprising:

a library of despooling backplane plugins;

a controller having an interface to accept a print job in a first printer language format associated with a first printer device type, the controller converting the print job to an internal representation (IR) document that is independent of a printer device target and the language format associated with a printer device target, and supplying the IR document at an interface;

a shared data memory having an interface to accept the IR document;

a component processor having an interface to call a plurality of plugins from the library and an interface to accept the IR document accessed from the shared data memory, the component processor generating a multiple processed IR document by using the plugins to perform an action selected from a group consisting of parallel processing the IR document, serially processing the IR document, and processing the IR document using a combination of parallel and serial processes, converting the processed IR document into a processed print job in a second printer language format associated with a second printer device type, and supplying the processed print job at an interface.

17. (original) The backplane of claim 16 wherein the component processor calls plugins chosen from the group including:

user-selected plugins;

predetermined plugins responsive to criterion such as printer driver, printer model, printer configuration, printer condition, user, administrative grouping, document content, and document type; and,

plugins that are called from other plugins.

18. canceled

19. (previously presented) The backplane of claim 16 wherein the component processor performs a process selected from the group including translating the print job into an IR document, analyzing, modifying the print job data, modifying control of the print job, gathering print subsystem-external information related to the print job, producing print subsystem-external information related to the print job, setting print subsystem-external information related to the print job, and reassembling IR documents.

20. canceled

21. (previously presented) The backplane of claim 19 wherein the component processor reassembles IR documents to remove conflicts between a plurality of processed IR documents and converts the plurality of IR documents into the processed print job.

22. (previously presented) The backplane of claim 19 wherein component processor uses print subsystem-external information related to the print job to select the second printer language format associated with the second printer device type.

23. (original) The backplane of claim 19 wherein the component processor gathers print subsystem-external information related to the print job by monitoring a printer condition selected from the group including the availability of connected printing devices, currently printing print jobs, pending print jobs, completed print jobs, print job failures, printer performance, consumables, printer locality, and printer capabilities.

24. (original) The backplane of claim 23 wherein the component processor monitors a printer condition includes by:

querying a node selected from the group including a print subsystem spooler, a print subsystem port manager, a printer manager, a print service, and a printer; and,

storing the printer condition information in cache.

25. canceled

26. (original) The backplane of claim 19 wherein the component processor translates the print job into an IR document by parsing spool/raster image processor (RIP) footers and headers, parsing a print job control header, and parsing language data selected from the group including raster, image, and page description language (PDL) data.

27.   (original)   The backplane of claim 26 wherein the component processor parses a print job control header by:

calling a plurality of printer job control header plugins selected from the group including printer job language (PJL), and job definition format (JDF); and,

using the print job control header plugin that recognizes the print job control header data.

28.   (original)   The backplane of claim 26 wherein the component processor parses the language data by:

calling a plurality of language plugins selected from the group including raster, image, printer control language (PCL), portable document format (PDF), PostScript (PS), and PCL XL, HP GL/2, IPDS, Escape P, SCS, and TIFF plugins; and,

using the language plugin that recognizes the language data.

29.   (original)   The backplane of claim 19 wherein component processor analyzes the IR document by performing an action selected from the group including job accounting, job control, printer pooling, job splitting, access control, security, content filtering, resource downloading, compression, reformatting, and language translation.

30.   (original)   The backplane of claim 19 wherein the component processor gathers print subsystem-external information

related to the print job by gathering information selected from the group including a print subsystem host, a printer, print service, and a printer device manager.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE